

IN THE CLAIMS:

Please cancel claims 26, 34, 44 and 47, and amend claims 20, 22, 24, 27, 28, 31, 38, 42, 45 and 48, as shown below in the detailed listing of all claims which are, or were, in this application:

Claims 1-19 (Canceled)

20. (Currently amended) A bioresorbable sol-gel derived SiO_2 , wherein

- a) the SiO_2 is a monolith,
- b) the SiO_2 comprises no biologically active agent other than the SiO_2 itself, and
- c) the dissolution rate of the SiO_2 in a TRIS buffer at a temperature of +37 °C and pH 7.4 is $\geq 1.0 \frac{2.0}{\text{wt-}\%/\text{h}}$,
said SiO_2 being prepared by correlating a desired biodegradability of SiO_2 with changes 1), 2) and/or 3) to a method of preparing a SiO_2 having a very fast bioresorption rate from a sol comprising water, an alkoxide or inorganic silicate and a lower alcohol with ≤ 4 carbons, using a mineral acid or a base as a catalyst, aging said sol and drying said sol, wherein

- a) in the sol the starting
 - i) pH is from 0.05 to 2.5,
 - ii) molar ratio of water to the alkoxide or inorganic silicate is 0.5 to 2.5,
 - iii) molar ratio of alcohol to the alkoxide or inorganic silicate is ≥ 0.5 ; and
- b) either,
 - i) the sol is, without induced changes of sol composition,
 - let to gel spontaneously at a temperature of ≤ 25 °C or an elevated temperature of 65 °C to 90 °C, or
 - gelation of the sol is done by forced drying of the sol, or
 - ii) a change or changes of sol composition are induced after sol ageing but before gel formation, said change or changes of sol composition optionally comprising addition of a biologically active agent or agents with or without protective agent or agents, and
 - the ratio t/t_{gel} is ≥ 0.005 , wherein
 - t is the ageing time of the sol, i.e. time from preparation of said sol to the induced changes, and

t_{gel} is the time point where the sol would have turned to a gel without the induced changes; and forced drying of the sol is carried out or initiated within a time of \leq 30 minutes from said induced change or changes, and wherein

- 1) comprises deviating in the sol any of the starting values:

i) pH

ii) molar ratio of water to the alkoxide or inorganic silicate, and/or

iii) molar ratio of alcohol to the alkoxide or inorganic silicate;

from said values defined in a) i) - iii) of said method of preparing a SiO_2 ;

- 2) comprises carrying out induced changes by addition of a component or components, including optional addition of the biologically active agent or agents with or without said protective agent or agents, said changes affecting any of the values i) - iii) of a) of said method of preparing a SiO_2 or 1) above if applied by
 - i) not carrying out forced drying, or

ii) carrying out or initiating forced drying of the sol later than defined in b) ii) of said method of preparing a SiO_2 ; and

3) comprises deviating the temperature for letting the sol gel spontaneously from the values defined in b) i) of said method of preparing a SiO_2 ; and by preparing said SiO_2 with said changes to the method correlating with the desired biodegradability.

21. (Previously presented) The bioresorbable sol-gel derived SiO_2 of claim 20, wherein the SiO_2 further comprises at least one biologically active agent other than the SiO_2 itself.

22. (Withdrawn - Currently amended) A bioresorbable sol-gel derived SiO_2 , wherein

- a) the SiO_2 is a coating,
- b) the SiO_2 comprises no biologically active agent other than the SiO_2 itself, and
- c) the dissolution rate of the SiO_2 in TRIS buffer at a temperature of +37 °C and pH 7.4 is ≥ 0.04 wt-%/h,

said SiO_2 being prepared by correlating a desired biodegradability of SiO_2 with changes 1), 2) and/or 3) to a method of preparing a SiO_2 having a very fast bioresorption rate from a sol comprising water, an alkoxide or inorganic silicate and a lower alcohol with ≤ 4 carbons, using a mineral acid or a base as a catalyst, aging said sol and drying said sol, wherein

- a) in the sol the starting
 - i) pH is from 0.05 to 2.5,
 - ii) molar ratio of water to the alkoxide or inorganic silicate is 0.5 to 2.5,
 - iii) molar ratio of alcohol to the alkoxide or inorganic silicate is ≥ 0.5 ; and
- b) either,
 - i) the sol is, without induced changes of sol composition,
 - let to gel spontaneously at a temperature of ≤ 25 °C or an elevated temperature of 65 °C to 90 °C, or
 - gelation of the sol is done by forced drying of the sol, or
 - ii) a change or changes of sol composition are induced after sol ageing but before gel formation, said change or changes of sol composition optionally comprising addition of a

biologically active agent or agents with or without protective agent or agents, and

the ratio t/t_{gel} is ≥ 0.005 , wherein

t is the ageing time of the sol, i.e. time from preparation of said sol to the induced changes, and t_{gel} is the time point where the sol would have turned to a gel without the induced changes; and

forced drying of the sol is carried out or initiated within a time of ≤ 30 minutes from said induced change or changes, and wherein

1) comprises deviating in the sol any of the starting values:

i) pH

ii) molar ratio of water to the alkoxide or inorganic silicate, and/or

iii) molar ratio of alcohol to the alkoxide or inorganic silicate;

from said values defined in a) i) - iii) of said method of preparing a SiO_2 ;

2) comprises carrying out induced changes by addition of a component or components, including optional addition of

the biologically active agent or agents with or without said protective agent or agents, said changes affecting any of the values i) - iii) of a) of said method of preparing a SiO_2 or 1) above if applied by

- i) not carrying out forced drying, or
- ii) carrying out or initiating forced drying of the sol later than defined in b) ii) of said method of preparing a SiO_2 ; and

3) comprises deviating the temperature for letting the sol gel spontaneously from the values defined in b) i) of said method of preparing a SiO_2 ; and by preparing said SiO_2 with said changes to the method correlating with the desired biodegradability.

23. (Withdrawn) The bioresorbable sol-gel derived SiO_2 of claim 22, wherein the SiO_2 further comprises at least one biologically active agent other than the SiO_2 itself.

24. (Withdrawn - currently amended) A bioresorbable sol-gel derived SiO_2 , wherein

- a) the SiO_2 is a particle,

b) the SiO_2 comprises no biologically active agent other than the SiO_2 itself, and

c) the dissolution rate of the SiO_2 in TRIS buffer at a temperature of +37 °C and pH 7.4 is $\geq 1.0 \text{ } 2.0 \text{ wt-\%}/\text{h}$, said SiO_2 being prepared by correlating a desired biodegradability of SiO_2 with changes 1), 2) and/or 3) to a method of preparing a SiO_2 ~~having a very fast bioresorption rate~~ from a sol comprising water, an alkoxide or inorganic silicate and a lower alcohol with ≤ 4 carbons, using a mineral acid or a base as a catalyst, aging said sol and drying said sol, wherein

a) in the sol the starting

- i) pH is from 0.05 to 2.5,
- ii) molar ratio of water to the alkoxide or inorganic silicate is 0.5 to 2.5,
- iii) molar ratio of alcohol to the alkoxide or inorganic silicate is ≥ 0.5 ; and

b) either,

- i) the sol is, without induced changes of sol composition,
 - let to gel spontaneously at a temperature of ≤ 25 °C or an elevated temperature of 65 °C to 90 °C, or

- gelation of the sol is done by forced drying of the sol, or

ii) a change or changes of sol composition are induced after sol ageing but before gel formation, said change or changes of sol composition optionally comprising addition of a biologically active agent or agents with or without protective agent or agents, and

the ratio t/t_{gel} is ≥ 0.005 , wherein

t is the ageing time of the sol, i.e. time from preparation of said sol to the induced changes, and t_{gel} is the time point where the sol would have turned to a gel without the induced changes; and

forced drying of the sol is carried out or initiated within a time of ≤ 30 minutes from said induced change or changes, and

wherein

1) comprises deviating in the sol any of the starting values:

i) pH

ii) molar ratio of water to the alkoxide or inorganic silicate, and/or

iii) molar ratio of alcohol to the alkoxide or inorganic silicate; from said values defined in a) i) - iii) of said method of preparing a SiO_2 ;

2) comprises carrying out induced changes by addition of a component or components, including optional addition of the biologically active agent or agents with or without said protective agent or agents, said changes affecting any of the values i) - iii) of a) of said method of preparing a SiO_2 or 1) above if applied by

- i) not carrying out forced drying, or
- ii) carrying out or initiating forced drying of the sol later than defined in b) ii) of said method of preparing a SiO_2 ; and

3) comprises deviating the temperature for letting the sol gel spontaneously from the values defined in b) i) of said method of preparing a SiO_2 ; and by preparing said SiO_2 with said changes to the method correlating with the desired biodegradability.

25. (Withdrawn) The bioresorbable sol-gel derived SiO_2 of claim 24, wherein the SiO_2 further comprises at least one biologically active agent other than the SiO_2 itself.

26. (Canceled)

27. (Currently amended) The SiO_2 according to ~~claim 26~~ claim 20, wherein the dissolution rate of the SiO_2 is ≥ 4.0 wt-%/h.

28. (Withdrawn - currently amended) A bioresorbable sol-gel derived SiO_2 , wherein

- a) the SiO_2 is a monolith,
- b) the SiO_2 comprises no biologically active agent other than the SiO_2 itself, and
- c) the dissolution rate of the SiO_2 in a TRIS buffer at a temperature of $+37$ °C and pH 7.4 is from 0.001 to 0.05 wt-%/h, said SiO_2 being prepared by correlating a desired biodegradability of SiO_2 with changes 1), 2) and/or 3) to a method of preparing a SiO_2 having a very fast bioresorption rate from a sol comprising water, an alkoxide or inorganic silicate and a lower alcohol with

≤ 4 carbons, using a mineral acid or a base as a catalyst, aging said sol and drying said sol, wherein

a) in the sol the starting

i) pH is from 0.05 to 2.5,

ii) molar ratio of water to the alkoxide or inorganic silicate is 0.5 to 2.5,

iii) molar ratio of alcohol to the alkoxide or inorganic silicate is ≥ 0.5; and

b) either,

i) the sol is, without induced changes of sol composition,

- let to gel spontaneously at a temperature of ≤ 25 °C or an elevated temperature of 65 °C to 90 °C, or
- gelation of the sol is done by forced drying of the sol, or

ii) a change or changes of sol composition are induced after sol ageing but before gel formation, said change or changes of sol composition optionally comprising addition of a biologically active agent or agents with or without protective agent or agents, and

the ratio t/t_{gel} is ≥ 0.005, wherein

t is the ageing time of the sol, i.e. time from preparation of said sol to the induced changes, and t_{gel} is the time point where the sol would have turned to a gel without the induced changes; and forced drying of the sol is carried out or initiated within a time of ≤ 30 minutes from said induced change or changes, and wherein

- 1) comprises deviating in the sol any of the starting values:
 - i) pH
 - ii) molar ratio of water to the alkoxide or inorganic silicate, and/or
 - iii) molar ratio of alcohol to the alkoxide or inorganic silicate;from said values defined in a) i) - iii) of said method of preparing a SiO_2 ;
- 2) comprises carrying out induced changes by addition of a component or components, including optional addition of the biologically active agent or agents with or without said protective agent or agents, said changes affecting

any of the values i) - iii) of a) of said method of preparing a SiO_2 or 1) above if applied by

- i) not carrying out forced drying, or
- ii) carrying out or initiating forced drying of the sol later than defined in b) ii) of said method of preparing a SiO_2 ; and

3) comprises deviating the temperature for letting the sol gel spontaneously from the values defined in b) i) of said method of preparing a SiO_2 ; and by preparing said SiO_2 with said changes to the method correlating with the desired biodegradability.

29. (Previously presented) The bioresorbable sol-gel derived SiO_2 of claim 28, wherein the SiO_2 further comprises at least one biologically active agent other than the SiO_2 itself.

30. (Canceled)

31. (Withdrawn - Currently amended) A bioresorbable sol-gel derived SiO_2 , wherein

- a) the SiO_2 is a coating,

- b) the SiO_2 comprises no biologically active agent other than the SiO_2 itself, and
- c) the dissolution rate of the SiO_2 in TRIS buffer at a temperature of $+37^\circ\text{C}$ and pH 7.4 is from 0.001 to 0.015 wt-%/h,

said SiO_2 being prepared by correlating a desired biodegradability of SiO_2 with changes 1), 2) and/or 3) to a method of preparing a SiO_2 ~~having a very fast bioresorption rate~~ from a sol comprising water, an alkoxide or inorganic silicate and a lower alcohol with ≤ 4 carbons, using a mineral acid or a base as a catalyst, aging said sol and drying said sol, wherein

- a) in the sol the starting
 - i) pH is from 0.05 to 2.5,
 - ii) molar ratio of water to the alkoxide or inorganic silicate is 0.5 to 2.5,
 - iii) molar ratio of alcohol to the alkoxide or inorganic silicate is ≥ 0.5 ; and
- b) either,
 - i) the sol is, without induced changes of sol composition,
 - let to gel spontaneously at a temperature of $\leq 25^\circ\text{C}$ or an elevated temperature of 65°C to 90°C , or

- gelation of the sol is done by forced drying of the sol, or

ii) a change or changes of sol composition are induced after sol ageing but before gel formation, said change or changes of sol composition optionally comprising addition of a biologically active agent or agents with or without protective agent or agents, and

the ratio t/t_{gel} is ≥ 0.005 , wherein

t is the ageing time of the sol, i.e. time from preparation of said sol to the induced changes, and t_{gel} is the time point where the sol would have turned to a gel without the induced changes; and

forced drying of the sol is carried out or initiated within a time of ≤ 30 minutes from said induced change or changes, and

wherein

1) comprises deviating in the sol any of the starting values:

i) pH

ii) molar ratio of water to the alkoxide or inorganic silicate, and/or

iii) molar ratio of alcohol to the alkoxide or inorganic silicate; from said values defined in a) i) - iii) of said method of preparing a SiO_2 ;

2) comprises carrying out induced changes by addition of a component or components, including optional addition of the biologically active agent or agents with or without said protective agent or agents, said changes affecting any of the values i) - iii) of a) of said method of preparing a SiO_2 or 1) above if applied by

- i) not carrying out forced drying, or
- ii) carrying out or initiating forced drying of the sol later than defined in b) ii) of said method of preparing a SiO_2 ; and

3) comprises deviating the temperature for letting the sol gel spontaneously from the values defined in b) i) of said method of preparing a SiO_2 ; and by preparing said SiO_2 with said changes to the method correlating with the desired biodegradability.

32. (Withdrawn) The bioresorbable sol-gel derived SiO_2 of claim 31, wherein the SiO_2 further comprises at least one biologically active agent other than the SiO_2 itself.

33. (Previously presented) The bioresorbable sol-gel derived SiO_2 of claim 21, wherein said biologically active agent is a peptide, protein or cell.

34. (Canceled)

35. (Previously presented) The bioresorbable sol-gel derived SiO_2 of claim 29, wherein said biologically active agent is a peptide, protein or cell.

36. (Canceled)

37. (Canceled)

38. (Withdrawn - currently amended) A bioresorbable sol-gel derived SiO_2 , wherein
a) the SiO_2 is a monolith,

b) the SiO_2 comprises no biologically active agent other than the SiO_2 itself, and

c) the dissolution rate of the SiO_2 in a TRIS buffer at a temperature of $+37$ $^{\circ}\text{C}$ and pH 7.4 is ≥ 1.0 2.0 wt-%/h, said SiO_2 being prepared from a sol comprising water, an alkoxide or inorganic silicate and a lower alcohol with ≤ 4 carbons, using a mineral acid or a base as a catalyst, aging said sol and drying said sol, wherein

a) in the sol the starting

- i) pH is from 0.05 to 2.5,
- ii) molar ratio of water to the alkoxide or inorganic silicate is 0.5 to 2.5,
- iii) molar ratio of alcohol to the alkoxide or inorganic silicate is ≥ 0.5 ; and

b) either,

- i) the sol is, without induced changes of sol composition,
 - let to gel spontaneously at a temperature of ≤ 25 $^{\circ}\text{C}$ or an elevated temperature of 65 $^{\circ}\text{C}$ to 90 $^{\circ}\text{C}$, or
 - gelation of the sol is done by forced drying of the sol, or

ii) a change or changes of sol composition are induced after sol ageing but before gel formation, said change or changes of sol composition optionally comprising addition of a biologically active agent or agents with or without protective agent or agents, and

the ratio t/t_{gel} is ≥ 0.005 , wherein

t is the ageing time of the sol, i.e. time from preparation of said sol to the induced changes, and t_{gel} is the time point where the sol would have turned to a gel without the induced changes; and

forced drying of the sol is carried out or initiated within a time of ≤ 30 minutes.

39. (Previously presented) The bioresorbable sol-gel derived SiO_2 of claim 38, wherein the SiO_2 further comprises at least one biologically active agent other than the SiO_2 itself.

40. (Withdrawn) A bioresorbable sol-gel derived SiO_2 , wherein

- a) the SiO_2 is a coating,
- b) the SiO_2 comprises no biologically active agent other than the SiO_2 itself, and

c) the dissolution rate of the SiO_2 in TRIS buffer at a temperature of $+37$ $^{\circ}\text{C}$ and pH 7.4 is ≥ 0.04 wt-%/h, said SiO_2 being prepared from a sol comprising water, an alkoxide or inorganic silicate and a lower alcohol with ≤ 4 carbons, using a mineral acid or a base as a catalyst, aging said sol and drying said sol, wherein

a) in the sol the starting

- i) pH is from 0.05 to 2.5,
- ii) molar ratio of water to the alkoxide or inorganic silicate is 0.5 to 2.5,
- iii) molar ratio of alcohol to the alkoxide or inorganic silicate is ≥ 0.5 ; and

b) either,

- i) the sol is, without induced changes of sol composition,
 - let to gel spontaneously at a temperature of ≤ 25 $^{\circ}\text{C}$ or an elevated temperature of 65 $^{\circ}\text{C}$ to 90 $^{\circ}\text{C}$, or
 - gelation of the sol is done by forced drying of the sol, or
- ii) a change or changes of sol composition are induced after sol ageing but before gel formation, said change or changes of sol composition optionally comprising addition of a

biologically active agent or agents with or without protective agent or agents, and

the ratio t/t_{gel} is ≥ 0.005 , wherein

t is the ageing time of the sol, i.e. time from preparation of said sol to the induced changes, and t_{gel} is the time point where the sol would have turned to a gel without the induced changes; and

forced drying of the sol is carried out or initiated within a time of ≤ 30 minutes.

41. (Previously presented) The bioresorbable sol-gel derived SiO_2 of claim 40, wherein the SiO_2 further comprises at least one biologically active agent other than the SiO_2 itself.

42. (Withdrawn - currently amended) A bioresorbable sol-gel derived SiO_2 , wherein

- a) the SiO_2 is a particle,
- b) the SiO_2 comprises no biologically active agent other than the SiO_2 itself, and
- c) the dissolution rate of the SiO_2 in TRIS buffer at a temperature of $+37$ $^{\circ}C$ and pH 7.4 is ≥ 1.0 2.0 wt-%/h,

said SiO_2 being prepared from a sol comprising water, an alkoxide or inorganic silicate and a lower alcohol with ≤ 4 carbons, using a mineral acid or a base as a catalyst, aging said sol and drying said sol, wherein

- a) in the sol the starting
 - i) pH is from 0.05 to 2.5,
 - ii) molar ratio of water to the alkoxide or inorganic silicate is 0.5 to 2.5,
 - iii) molar ratio of alcohol to the alkoxide or inorganic silicate is ≥ 0.5 ; and
- b) either,
 - i) the sol is, without induced changes of sol composition,
 - let to gel spontaneously at a temperature of ≤ 25 $^{\circ}\text{C}$ or an elevated temperature of 65 $^{\circ}\text{C}$ to 90 $^{\circ}\text{C}$, or
 - gelation of the sol is done by forced drying of the sol, or
 - ii) a change or changes of sol composition are induced after sol ageing but before gel formation, said change or changes of sol composition optionally comprising addition of a biologically active agent or agents with or without protective agent or agents, and

the ratio t/t_{gel} is ≥ 0.005 , wherein
 t is the ageing time of the sol, i.e. time from
preparation of said sol to the induced changes, and
 t_{gel} is the time point where the sol would have turned to
a gel without the induced changes; and
forced drying of the sol is carried out or initiated within a
time of ≤ 30 minutes.

43. (Withdrawn) The bioresorbable sol-gel derived SiO_2 of claim 42, wherein the SiO_2 further comprises at least one biologically active agent other than the SiO_2 itself.

44. (Canceled)

45. (Withdrawn - currently amended) The SiO_2 of ~~claim 44~~ claim 38, wherein the dissolution rate of the SiO_2 is ≥ 4.0 wt-%/h.

46. (Previously presented) The bioresorbable sol-gel derived SiO_2 of claim 39, wherein said biologically active agent is a peptide, protein or cell.

47. (Canceled)

48. (Withdrawn) A bioresorbable sol-gel derived SiO_2 , wherein

- a) the SiO_2 is a particle,
- b) the SiO_2 comprises no biologically active agent other than the SiO_2 itself, and
- c) the dissolution rate of the SiO_2 in TRIS buffer at a temperature of +37 °C and pH 7.4 is 0.001 to 0.008 wt-%/h, said SiO_2 being prepared by correlating a desired biodegradability of SiO_2 with changes 1), 2) and/or 3) to a method of preparing a SiO_2 ~~having a very fast bioresorption rate~~ from a sol comprising water, an alkoxide or inorganic silicate and a lower alcohol with ≤ 4 carbons, using a mineral acid or a base as a catalyst, aging said sol and drying said sol, wherein
- a) in the sol the starting
 - i) pH is from 0.05 to 2.5,
 - ii) molar ratio of water to the alkoxide or inorganic silicate is 0.5 to 2.5,
 - iii) molar ratio of alcohol to the alkoxide or inorganic silicate is ≥ 0.5 ; and
- b) either,

- i) the sol is, without induced changes of sol composition,
 - let to gel spontaneously at a temperature of ≤ 25 °C or an elevated temperature of 65 °C to 90 °C, or
 - gelation of the sol is done by forced drying of the sol, or
- ii) a change or changes of sol composition are induced after sol ageing but before gel formation, said change or changes of sol composition optionally comprising addition of a biologically active agent or agents with or without protective agent or agents, and

the ratio t/t_{gel} is ≥ 0.005 , wherein

t is the ageing time of the sol, i.e. time from preparation of said sol to the induced changes, and t_{gel} is the time point where the sol would have turned to a gel without the induced changes; and

forced drying of the sol is carried out or initiated within a time of ≤ 30 minutes from said induced change or changes, and

wherein

- 1) comprises deviating in the sol any of the starting values:
 - i) pH

ii) molar ratio of water to the alkoxide or inorganic silicate, and/or

iii) molar ratio of alcohol to the alkoxide or inorganic silicate;

from said values defined in a) i) - iii) of said method of preparing a SiO_2 ;

2) comprises carrying out induced changes by addition of a component or components, including optional addition of the biologically active agent or agents with or without said protective agent or agents, said changes affecting any of the values i) - iii) of a) of said method of preparing a SiO_2 or 1) above if applied by

i) not carrying out forced drying, or

ii) carrying out or initiating forced drying of the sol later than defined in b) ii) of said method of preparing a SiO_2 ; and

3) comprises deviating the temperature for letting the sol gel spontaneously from the values defined in b) i) of said method of preparing a SiO_2 ; and by preparing said SiO_2 with said changes to the method correlating with the desired biodegradability.

49. (Previously presented) The bioresorbable sol-gel derived SiO₂ of claim 23, wherein the biologically active agent is a peptide, protein or cell.

50. (Previously presented) The bioresorbable sol-gel derived SiO₂ of claim 25, wherein the biologically active agent is a peptide, protein or cell.